

IN THE CLAIMS:

Please cancel claims 20-25, 27-29, 31-33, 35, 38-46 and 48-50 and add new claims 51-58, as shown below in the detailed listing of all claims which are, or were, in this application:

Claims 1-50 (Canceled)

51. (New) A bioresorbable sol-gel derived SiO<sub>2</sub>, wherein said SiO<sub>2</sub> is prepared by correlating a desired biodegradability of SiO<sub>2</sub> with changes 1), 2) and/or 3) to a method of preparing a SiO<sub>2</sub> from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

a) in the sol the starting

i) pH is from 0.05 to 2.5,

ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,

iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5; and

b) either,

i) the sol is, without induced changes of sol composition,

- let to gel spontaneously at a temperature of  $\leq 25$  °C or an elevated temperature of 65 °C to 90 °C, or
  - gelation of the sol is done by forced drying of the sol, or
- ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and
- the ratio  $t/t_{gel}$  is  $\geq 0.005$ , wherein
- $t$  is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and  $t_{gel}$  is the time point where the sol would have turned to a gel without the induced changes; and
- forced drying of the sol is carried out or initiated within a time of  $\leq 30$  minutes from said induced change or changes, and
- wherein

- 1) comprises deviating in the sol any of the starting values:

i) pH

- ii) molar ratio of water to the alkoxide or inorganic silicate, and/or
- iii) molar ratio of alcohol to the alkoxide or inorganic silicate;
- from said values defined in a) i) - iii) of said method of preparing a SiO<sub>2</sub>;
- 2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a SiO<sub>2</sub> or 1) above if applied by
- i) not carrying out forced drying, or
- ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO<sub>2</sub>; and
- 3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO<sub>2</sub>; and by preparing said SiO<sub>2</sub> with said changes to the method correlating with the desired biodegradability, and

wherein the SiO<sub>2</sub> prepared by the above process is

- a) a monolith having a minimum diameter of  $\geq$  0.5 mm and a SiO<sub>2</sub> dissolution rate in a TRIS buffer at a temperature of +37 °C and pH 7.4 of  $\geq$  2.0 wt-%/h, or
- b) a coating having a thickness of < 0.5 mm and a SiO<sub>2</sub> dissolution rate in TRIS buffer at a temperature of +37 °C and pH 7.4 of  $\geq$  0.15 wt-%/h, or
- c) a particle having a maximum diameter of  $\leq$  100 µm and a SiO<sub>2</sub> dissolution rate in TRIS buffer at a temperature of +37 °C and pH 7.4 is  $\geq$  1.0 wt-%/h.

52. (New) The bioresorbable sol-gel derived SiO<sub>2</sub> of claim 51, wherein the SiO<sub>2</sub> further comprises at least one biologically active agent other than the SiO<sub>2</sub> itself.

53. (New) The bioresorbable sol-gel derived SiO<sub>2</sub> of claim 52, wherein said biologically active agent is a peptide, protein or cell.

54. (New) The bioresorbable sol-gel derived  $\text{SiO}_2$  of claim 51, wherein the  $\text{SiO}_2$  is in the form of a monolith and has a dissolution rate of  $\geq 4.0$  wt-%/h.

55. (New) A bioresorbable sol-gel derived  $\text{SiO}_2$ , said  $\text{SiO}_2$  being prepared by correlating a desired biodegradability of  $\text{SiO}_2$  with changes 1), 2) and/or 3) to a method of preparing a  $\text{SiO}_2$  from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with  $\leq 4$  carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

a) in the sol the starting

i) pH is from 0.05 to 2.5,

ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,

iii) molar ratio of alcohol to the alkoxide or inorganic silicate is  $\geq 0.5$ ; and

b) either,

i) the sol is, without induced changes of sol composition,

- let to gel spontaneously at a temperature of  $\leq 25$  °C or an elevated temperature of 65 °C to 90 °C, or

- gelation of the sol is done by forced drying of the sol, or

ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio  $t/t_{gel}$  is  $\geq 0.005$ , wherein

$t$  is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and  $t_{gel}$  is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of  $\leq 30$  minutes from said induced change or changes, and

wherein

1) comprises deviating in the sol any of the starting values:

i) pH

ii) molar ratio of water to the alkoxide or inorganic silicate, and/or

- iii) molar ratio of alcohol to the alkoxide or inorganic silicate;
- from said values defined in a) i) - iii) of said method of preparing a  $\text{SiO}_2$ ;
- 2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a  $\text{SiO}_2$  or 1) above if applied by
- i) not carrying out forced drying, or
  - ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a  $\text{SiO}_2$ ; and
- 3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a  $\text{SiO}_2$ ; and by preparing said  $\text{SiO}_2$  with said changes to the method correlating with the desired biodegradability,

wherein

- a) the  $\text{SiO}_2$  produced by this method is a monolith having a diameter of  $\geq 0.5$  mm, and a  $\text{SiO}_2$  dissolution rate in a TRIS buffer at a temperature of +37 °C and pH 7.4 is from 0.001 to 0.05 wt-%/h, or
- b) the  $\text{SiO}_2$  produced by this method is a coating having a thickness of  $< 0.5$  mm and a dissolution rate in TRIS buffer at a temperature of +37 °C and pH 7.4 is from 0.001 to 0.05 wt-%/h.

56. (New) The bioresorbable sol-gel derived  $\text{SiO}_2$  of claim 55, wherein the  $\text{SiO}_2$  further comprises at least one biologically active agent other than the  $\text{SiO}_2$  itself.

57. (New) The bioresorbable sol-gel derived  $\text{SiO}_2$  of claim 56, wherein said biologically active agent is a peptide, protein or cell.

58. (New) A bioresorbable sol-gel derived  $\text{SiO}_2$ , wherein said  $\text{SiO}_2$  is prepared from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with  $\leq 4$  carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

- a) in the sol the starting
  - i) pH is from 0.05 to 2.5,
  - ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
  - iii) molar ratio of alcohol to the alkoxide or inorganic silicate is  $\geq 0.5$ ; and
- b) either,
  - i) the sol is, without induced changes of sol composition,
    - let to gel spontaneously at a temperature of  $\leq 25$  °C or an elevated temperature of 65 °C to 90 °C, or
    - gelation of the sol is done by forced drying of the sol, or
  - ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and
    - the ratio  $t/t_{gel}$  is  $\geq 0.005$ , wherein
    - $t$  is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and

$t_{gel}$  is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of  $\leq$  30 minutes; and wherein the  $\text{SiO}_2$  prepared by the above process is

- a) a monolith having a diameter of  $\geq$  0.5 mm, and a  $\text{SiO}_2$  dissolution rate in a TRIS buffer at a temperature of +37 °C and pH 7.4 of  $\geq$  2.0 wt-%/h, or
- b) a coating having a thickness of  $<$  0.5 mm, and a  $\text{SiO}_2$  dissolution rate in TRIS buffer at a temperature of +37 °C and pH 7.4 of  $\geq$  0.15 wt-%/h, or
- c) a particle having a maximum diameter of  $\leq$  100  $\mu\text{m}$ , and a  $\text{SiO}_2$  dissolution rate in TRIS buffer at a temperature of +37 °C and pH 7.4 of  $\geq$  1.0 wt-%/h.